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FIVE-YEAR REVIEW REPORT

WHITTAKER CORPORATION

MINNEAPOLIS, MINNESOTA

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I. PURPOSE

The United States Environmental Protection Agency (U.S. EPA) has conducted a Five-Year Review of the Remedial Action (RA) performed at the Whittaker Corporation Site, Minneapolis, Minnesota. This review was intended to evaluate whether the RA remains protective of public health and the environment.

Section 121(c) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) requires that periodic reviews (at least once every five years), be conducted for sites where hazardous substances, pollutants, or contaminants remain at the site after initiation of remedial actions for the site. The purpose of such a review is to determine the continued adequacy of the remedial actions implemented and to evaluate whether original cleanup levels decided upon remain protective of human health and the environment.

OSWER Directive 9355.7-02 (Structure and Components of Five-Year Review, May 23, 1991) provides that U.S. EPA will conduct five-year reviews as a matter of policy at (1) sites where no hazardous substances will remain above levels that allow unlimited use and unrestricted exposure after completion of the RA, but the cleanup levels specified in the ROD will require five or more years to attain, or (2) sites addressed pre-SARA at which the remedy, upon attainment of the cleanup levels, will not allow unlimited use and unrestricted exposure. The five-year review of the Whittaker Corporation site was conducted in accordance with this policy.

U.S. EPA has established a three-tier approach to conducting Five-Year Reviews, the most basic of which provides a minimum protectiveness evaluation (Level 1 review). U.S. EPA contemplates that a Level I review will be appropriate in all but a relatively few cases where site-specific circumstances suggest otherwise. The second and third levels (Level II and Level III) of review are intended to provide the flexibility to respond to varying site-specific considerations, employing further analysis. Site-specific considerations, including the nature of the response action, the status of on-site response activities, and the proximity to populated areas and sensitive environmental areas determine the level of review for a given site. U.S. EPA has determined that a Level I review is appropriate for this site.

II. SITE HISTORY

The Whittaker site is located at 3134 California Street Northeast, Minneapolis, Minnesota (Figure 1).

During World War II, a partnership known as Triploil Holdings Company was formed and operated on the Whittaker Corporation site. Triploil Holdings Company manufactured war materials for the military. These materials included motor vehicle supplies such as anti-freeze and oils. In the early 1950's, Triploil Holdings Company expanded its business and began to manufacture industrial coatings (paints). On June 1, 1954, a corporation known as Mol-Rez Corporation was formed as a Minnesota corporation with its principal place of business at 3134 California Street N.E. Mol-Rez Corporation changed its name to American Petrochemical Corporation (APC) in February 1956.

The Whittaker Corporation acquired the property from APC, on November 17, 1967. The Whittaker Corporation, APC and its predecessors conducted similar activities on the site. These activities included automotive product packaging (principally anti-freeze), the production of industrial coatings and resins, and steel distribution.

These companies utilized large quantities of chemicals in its operations. Chemicals were stored in approximately 28 aboveground tanks ranging from 2,000 to 200,000 gallons in size. In addition, 21 underground storage tanks varying from 2500 to 14000 gallons in capacity were used to store raw chemical materials. These tanks contained hydrocarbon solvents, propylene glycol, styrene monomer, di-isobutyl ketone, methyl ethyl ketone, methyl isobutyl ketone, toluene, xylene, and other chemicals.

A variety of wastes were generated as a result of the processes used at the Whittaker Corporation site. These wastes included tank bottoms, paint sludge, old paints, off-specification paints and resins, and cleaning fluids.

Based on interviews with former employees from the various companies, it was determined that during the late 1950's and the early 1960's some of this waste material was disposed of in low-lying areas (Area A) on the Whittaker Site (Figure 2). In addition, empty pigment bags, pallets and other trash material were burned in an area near the northwest corner of the site. Sometime during the 1950's an incinerator was operated on site. The incinerator was relocated on the property throughout its use. The ash from the incinerator was disposed of in Area A.

During the mid-1970's, a trench was dug for a sprinkler system. Some of the people interviewed by Whittaker recall barrels of waste material being disposed of in this trench (Figure 2).

During the 1960's and 70's, drums containing waste material were stored in the yard of the facility. This area is indicated as Area D (Figure 2). Some interviewees indicated that the drums may have leaked at one time or another.

There was also information indicating that water run-off contaminated with sludge materials from the solvent recovery still would flow towards the northwest corner of the property (Figure 2).

III. Results of Site Investigations

In October 1977, the western portion of the Whittaker property was sold to Tool Tech Company. In 1978, excavation for a parking lot on this property uncovered rusted drums, paint cans and drums filled with resin. This material was disposed of and the parking lot was completed (Figure 2). In 1989, Tool Tech Company sold the building to Kempf Paper. Kempf Paper is also known as 3-K Paper and they currently operate a paper distributor on-site.

In 1983, pursuant to MPCA staff request, the Whittaker Corporation installed three monitoring wells on and near the Whittaker site. Results from the initial groundwater sampling indicated benzene, tetrahydrofuran, methyl isobutyl ketone, 1,1-dichloroethane, cis and trans 1,2-dichloroethylene and chlorobenzene were present in the groundwater. The Whittaker Corporation installed one additional well in June of 1984. Results from samples taken from all four wells (monitoring wells 1,2,3,and 4 as seen on Figure 3) detected the same compounds listed above, as well as xylene and 1,1,2-trichloroethylene.

In January 1985, three additional monitoring wells were installed at the Whittaker Corporation site (monitoring wells 5,6,and 7 as seen in Figure 3). These wells confirmed the presence of the above listed chemicals in the groundwater at a much higher level than had been seen previously.

In March of 1985, the Whittaker Corporation conducted a test trenching operation in various locations around the property. The trenching operation unearthed numerous paint cans, rusted drums and intact drums containing liquids and semi-solids.

As a result of the trenching operation, Whittaker proposed to excavate Area A. The excavation was completed in April, 1985. At that time, Whittaker also, removed and disposed of all underground storage tanks on the property.

IV. Response Action Summary

In April 1985, a Request for Response Action (RFRA) was issued to the Whittaker Corporation by the Minnesota Pollution Control Agency (MPCA). The purpose of this RFRA was to begin the process for negotiating a Consent Order with Whittaker Corporation for design and implementation of an RI/FS and the development and implementation of a Response Action Plan (RAP). Response Actions completed under this RFRA included:

* the removal and disposal of approximately 280 cubic yards of damaged drums, resins and soils containing high levels of xylene, toluene and ethyl benzene. This waste was taken to Wayne Disposal located in Bellview, Michigan.

* approximately 600 drums in various stages of deterioration were removed and shipped to Rollins Environmental in Baton Rouge, Louisiana for disposal. Approximately 25 additional drums of recovered solvent were also shipped to Rollins Environmental for incineration.

* Approximately 10,000 cubic yards of soil were thermally processed on-site. The process consisted of an aggregate dryer that was operated at approximately 350 degrees Fahrenheit with residence time for the soils in the dryer of 10-15 minutes. After thermal treatment, the soils were landfarmed on-site for further treatment. Specific details for this remedial action are limited.

* removal and disposal of 21 underground storage tanks and 28 aboveground tanks.

* implementation of a groundwater pump-out system. Two pump-out wells were installed on-site to capture the groundwater plume. Well 8 was installed at a depth of approximately 22.5 feet and sump 3 was installed at a depth of approximately 30 feet. These two pump wells are connected via a 2-inch PVC pipe and discharge groundwater to the top of an air stripper. The treated water is then discharged from the air stripper to a POTW for disposal. - This is a NPDES to storm sewer that discharges to Mississippi

In November 1985, an amended RFRA was issued to Whittaker because negotiations failed to reach an agreement for a consent order. The amended RFRA governed further response actions at the site. At the time the amended RFRA was issued, Whittaker had already completed removal actions and a pump out system for the groundwater was operational. The amendment governs:

* the ongoing operation and maintenance of the pump out system;

* provides for long term groundwater monitoring and annual and monthly progress reports.

The Whittaker Corporation was required to analyze for four compounds on a quarterly basis until cleanup levels were reached. These compounds and cleanup standards are:

xylene	500 ppb
ethylbenzene	1,400 ppb
toluene	14,300 ppb
benzene	6.6 ppb

The Whittaker Corporation was also required to conduct annual analysis of monitoring well 10 for 1,1,-dichloroethylene and trichloroethylene. These compounds were also tested for, on a quarterly basis in monitoring well 4.

V. SITE VISIT

U.S. EPA's Remedial Project Manager and MPCA Site Project Manager visited the site on August 14, 1993. The facility is currently being leased to Rybak Excavating and Contracting, Inc. Various parts of the site are sublet to other companies. These companies include: Broadway Equipment, Retail services, and Metro Welding (Figure 4). Site representatives from Whittaker Corporation and Rybak Excavating and Contracting, Inc., stated that these companies use the facilities strictly for storage of non-hazardous materials. The site is not paved and there is little to no vegetative cover. The yard areas of the site are currently being used by Rybak for storage of vehicles and other construction equipment. The area of the site that is still owned by the Whittaker Corporation is partially fenced. In one area of the site access can be gained through a cable gate.

During an the earlier site visit on February 3, 1993, the pumping system was observed in operation. On the day of this visit, one of the two pumping gages was not operating. However, the pump was operating.

All monitoring wells were observed to be in good condition. No damaged well casings were noted.

VI. Areas of Discrepancy/Concern

There are two areas of discrepancy noted during the review of documents for the groundwater pump out system during the evaluation for this five year review. These were:

- Monitoring requirements

  According to the November 26, 1985 Amended RFRA, the Whittaker Corporation was required to monitor for six compounds. Table 2 provides a list of the analytical parameters and the monitoring schedule for the site. After review of the 1991 and 1992 Annual Reports it was discovered that some of the required monitoring is no longer taking place. This may be due to the fact that the monitoring wells not sampled have met the monitoring requirements set forth in the RFRA. However, clear documentation concerning this issue has not been provided. The compounds, 1,2-dichloroethylene and trichloroethylene, were supposed to be analyzed for in

MW-10 and MW-4. In the 1991 annual report, the Whittaker Corporation analyzed MW-4 and MW-3 for these compounds. In the 1992 annual report it was noted that MW-4 was suppose to be sampled for these compounds and was not. Further information needs to be provided as to why the monitoring discrepancies are occurring.

- Air Stripper

  According to the November 26, 1985 Amended RFRA, "The ground water treatment system for ground water pumped from the aquifer shall consist of stripping columns for air stripping VOCs from the groundwater". After review of the RA workplan and the site visit, it is apparent that the system is not being operated with two stripping columns. According to conversations during the February site visit, the air stripper has never operated with two stripping columns. Further information needs to be provided as to why this is the case.

Areas of concern, discovered during this five year review include the following:

Both U.S. EPA and MPCA are concerned about the lack of decrease in the levels of ethylbenzene and xylene. U.S. EPA recommends that the Whittaker Corporation continue with O&M and monitoring of the groundwater pump and treat system.

Based on the review of annual monitoring reports and other site information, it appears other source areas may still be influencing groundwater. In 1991, during building expansion on the Tool Tech company area (now operated by 3K Paper), buried drums were discovered in footing holes in the expansion area (Figure 5). These drums were similar to the ones removed during the initial removal activities conducted in the Tool Tech Company parking lot area.

VII. Recommendations

During the initial site visit, the Agencies suggested that Whittaker look into enhancement of the system. Whittaker has agreed to conduct experimental pulse pumping tests. These tests began in March, 1993. It is anticipated that the results from these tests will be provided to the Agency sometime in September, 1993. U.S. EPA recommends that further discussions on groundwater pump-out enhancement take place between the Agencies and the Whittaker Corporation.

Currently, the groundwater treatment system has reached the cleanup standards for all the chemicals of concern except for xylene and ethylbenzene. Based on results contained in the annual reports these levels do not appear to be falling. U.S. EPA has requested

that the Whittaker Corporation conduct some trench excavations in and around the Whittaker and 3-K properties to determine if other source areas exist that may be causing groundwater contamination.

In March, 1993, Whittaker submitted a letter to U.S. EPA indicating that they were willing to conduct a limited excavation exercise. The details for this excavation work have not yet been worked out. It is anticipated, that after the results from the pulse pumping exercise are submitted to the Agency, the Agency will further discuss this option with the Whittaker Corporation.

The potential exists to reduce groundwater remediation time through aggressive removal of source material combined with the proper enhancement of the groundwater pump out system. Before the next Five-Year review, Whittaker shall obtain analyses from all wells and complete maps of any identifiable groundwater plume. In addition, the Whittaker Corporation shall complete further investigations to ascertain if additional source areas are present on-site and whether these areas are contaminating groundwater. The Whittaker Corporation shall also provide clear documentation for the monitoring activities that have taken place over the past five years.

VIII. Applicable or Relevant and Appropriate Requirements (ARARS)

Five-Year Review guidance has established the policy for EPA to review and analyze the remedial action at a site as it is affected by newly promulgated or modified Federal and State environmental laws. ARARs associated with the construction and long-term maintenance and monitoring of the remedial action at the Whittaker Corporation site were not addressed in the first RFRA (April 23, 1985) or in the amended RFRA (November 26, 1985). However, these RFRAs did require that Whittaker Corporation implement Response Actions (RA's) to minimize the further migration of contaminated groundwater at and near the site so as to ensure reasonable protection of the aquifer. The remedial actions must meet all identified applicable or relevant and appropriate Federal and State requirements. ARARs for the selected remedy are listed below.

A. Groundwater Pump-out System

1. Safe Drinking Water Act (SWDA), 40 CFR Parts 141-143.

2. Clean Water Act, 40 CFR 403. Regulates discharge to Publicly owned Treatment Works (POTW)

3. Minnesota Rule 7060. Establishes uses and nondegradation goal for groundwater.

4. Minnesota Statute 103 H. Groundwater Protection Act.

Establishes health risk limits for groundwater contaminants.

B. To-Be-Considered (TBC) Criteria

1. Minnesota Department of Health (MDH) January, 1991 Recommended Allowable limits (RALs), Release No. 3. Establishes contaminant specific performance standard for groundwater.

If it is determined that excavation of sources of contamination is necessary to supplement the ground water pump and treat system, then ARARs related to soil excavation will be complied with. These include, but are not limited to:

1. Resource Conservation and recovery Act, 40 CFR Parts 260, 261, and 268. Regulates the characterization and disposal of hazardous wastes.

2. Minnesota Rule Chapter 7045.0021. Establishes characterization, management and disposal of hazardous wastes.

The remedial action performance standards for groundwater are the Minnesota Department of Health (MDH) Recommended Allowable Limits (RALs). Table 1 identifies the RALs, MCLs and selected cleanup goals for contaminants in groundwater at the Whittaker site, along with the maximum concentrations of contaminants from samples collected in 1992.

At this time, the U.S. EPA feels that the current cleanup levels indicated in the RFRA remain protective of human health and the environment. The facility currently has not met the cleanup standards for two of the six compounds they are required to monitor for. These two compounds are xylene and ethylbenzene. The order sets forth a cleanup standard of 500 ppb for xylene and 1400 ppb for ethylbenzene. If cleanup levels were adjusted to current MCLs, xylene would change to 10,000 ppb and ethylbenzene would change to 700 ppb.

It should be noted that at this time the aquifer impacted by the Whittaker site is not currently used as a drinking water source. A city ordinance within the city of Minneapolis does not allow for domestic wells to be installed in this shallow aquifer. In addition, the groundwater flow in this area is west and discharges into the Mississippi River, which is within 2000 feet of the facility.

IX. Statement of Protectiveness

The groundwater pump out system is both operational and functional,

and together with restricted groundwater use at the site, continues to provide adequate protection of human health and the environment.

X. Next Review

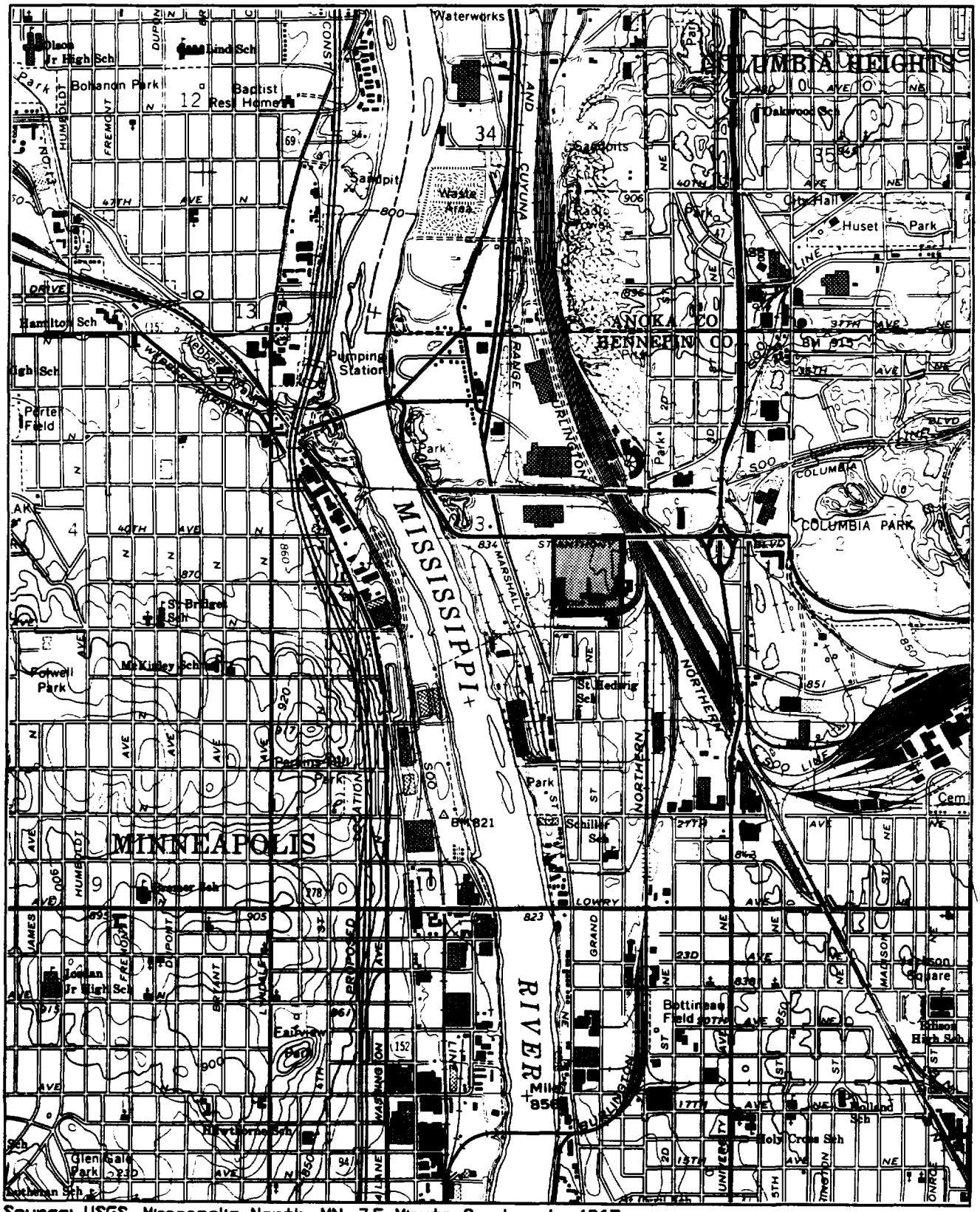
It is probable that hazardous substances, pollutants or contaminates will remain at the Whittaker Corporation site which will not allow for unlimited use or unrestricted exposure. U.S. EPA will conduct another Five-Year review by September 30, 1998. This review will be a Level II Review, and should provide the results of source investigation activities, groundwater quality analysis and maps of any identifiable groundwater plume.

XI. Implementation Requirements

Prior to the next Five-Year review the aforementioned recommendations should be addressed.

XII. CONCLUSION

This facility should continue to operate its groundwater pump out system. The Whittaker Corporation should also be required to conduct further investigations on the site property to determine if other source areas are affecting the current pump out system. Whittaker Corporation should enhance the current groundwater treatment system that is in place, in order to expedite the cleanup of groundwater. Any modification to the system should be based on data collected as part of the investigations recommended by this Five year review. Currently, the Whittaker Corporation is subject to the terms of the State issued RFRA. U.S. EPA will consider additional measures should circumstances warrant.



Source: USGS, Minneapolis North, MN, 7.5 Minute Quadrangle, 1967.

SCALE IN MILES

0 0.5 1

QUADRANGLE LOCATION

Figure 1 Site Location Map

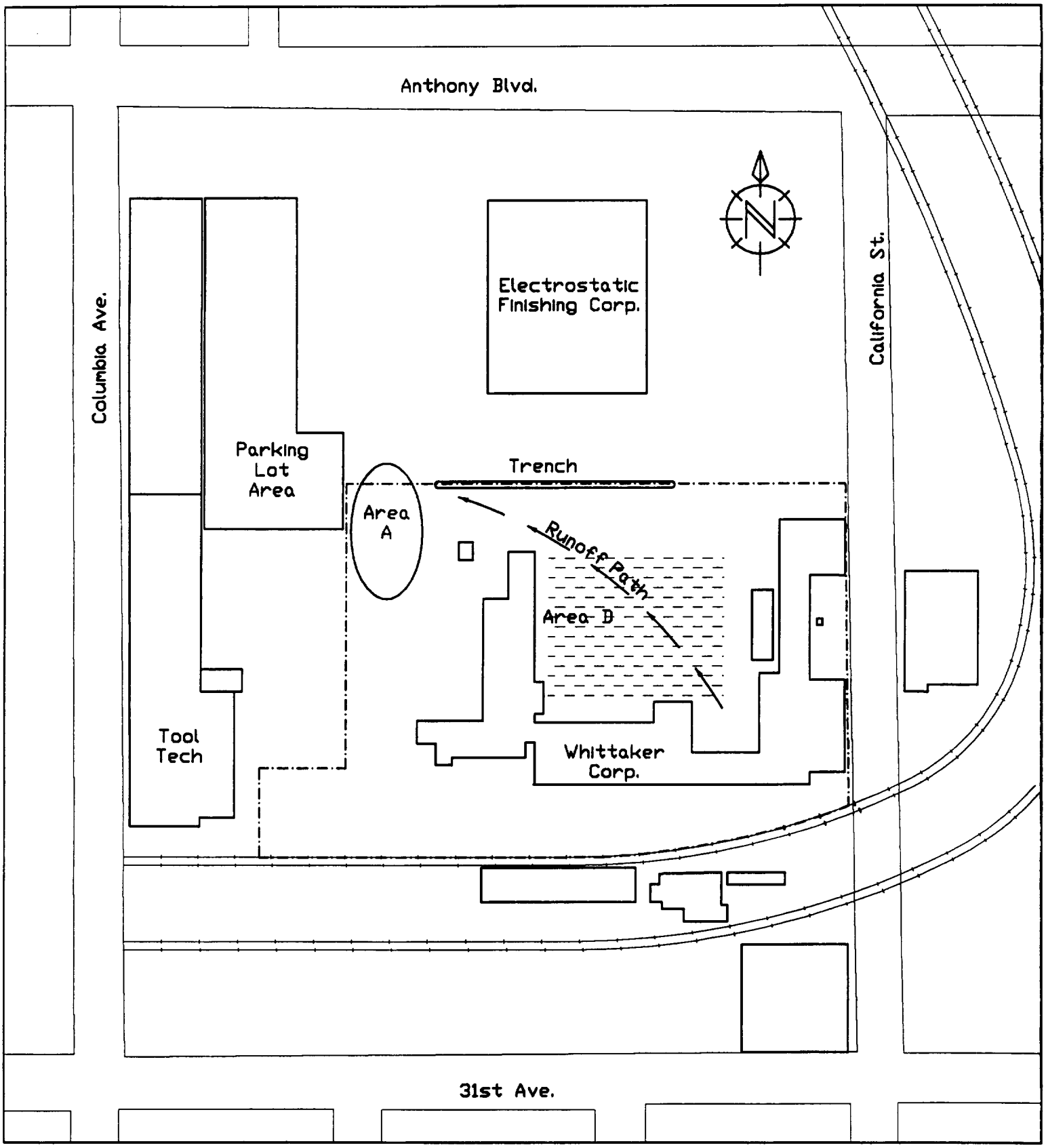


Figure 2 Site Features Map

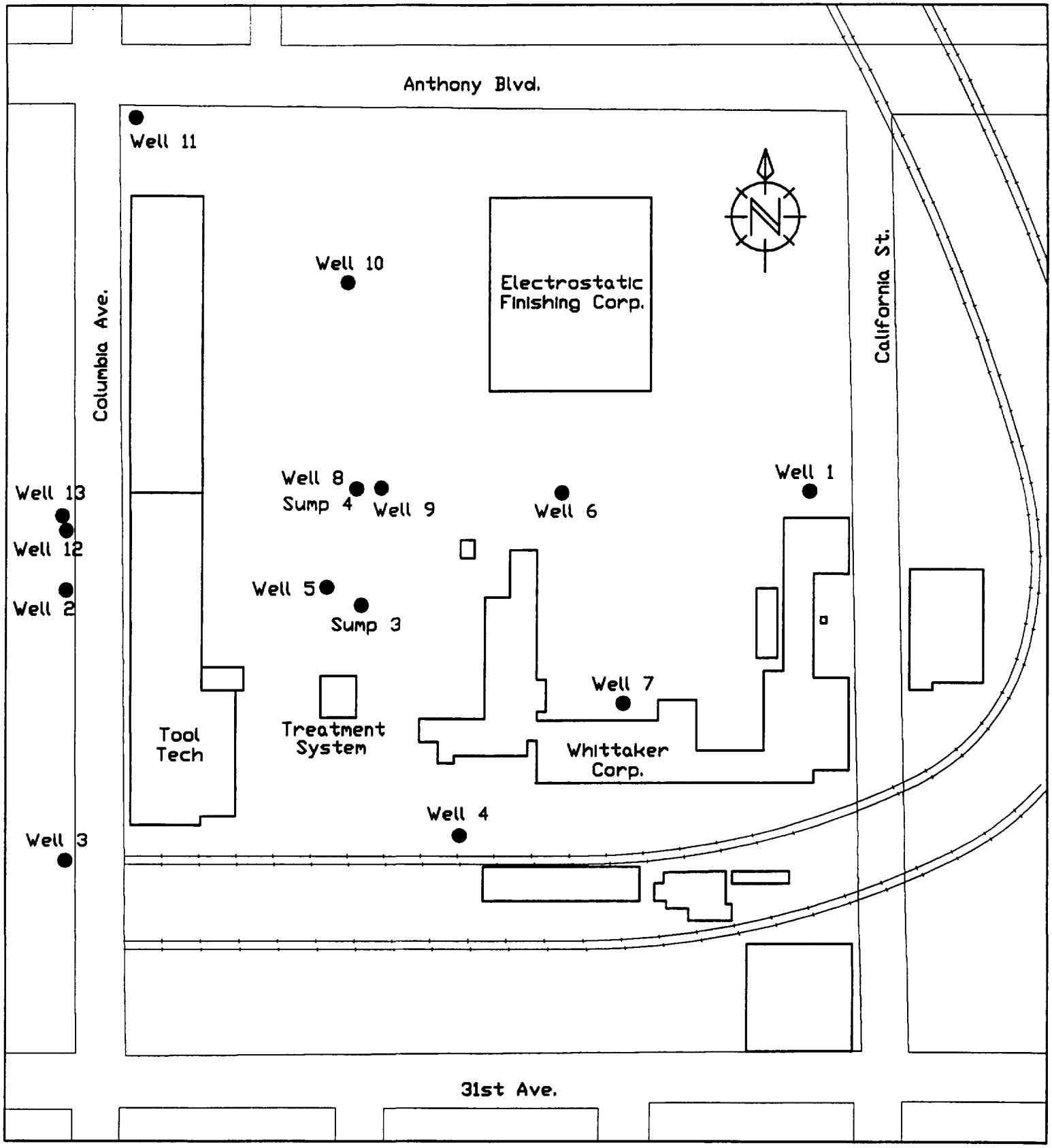


Figure 3 Well Location Map

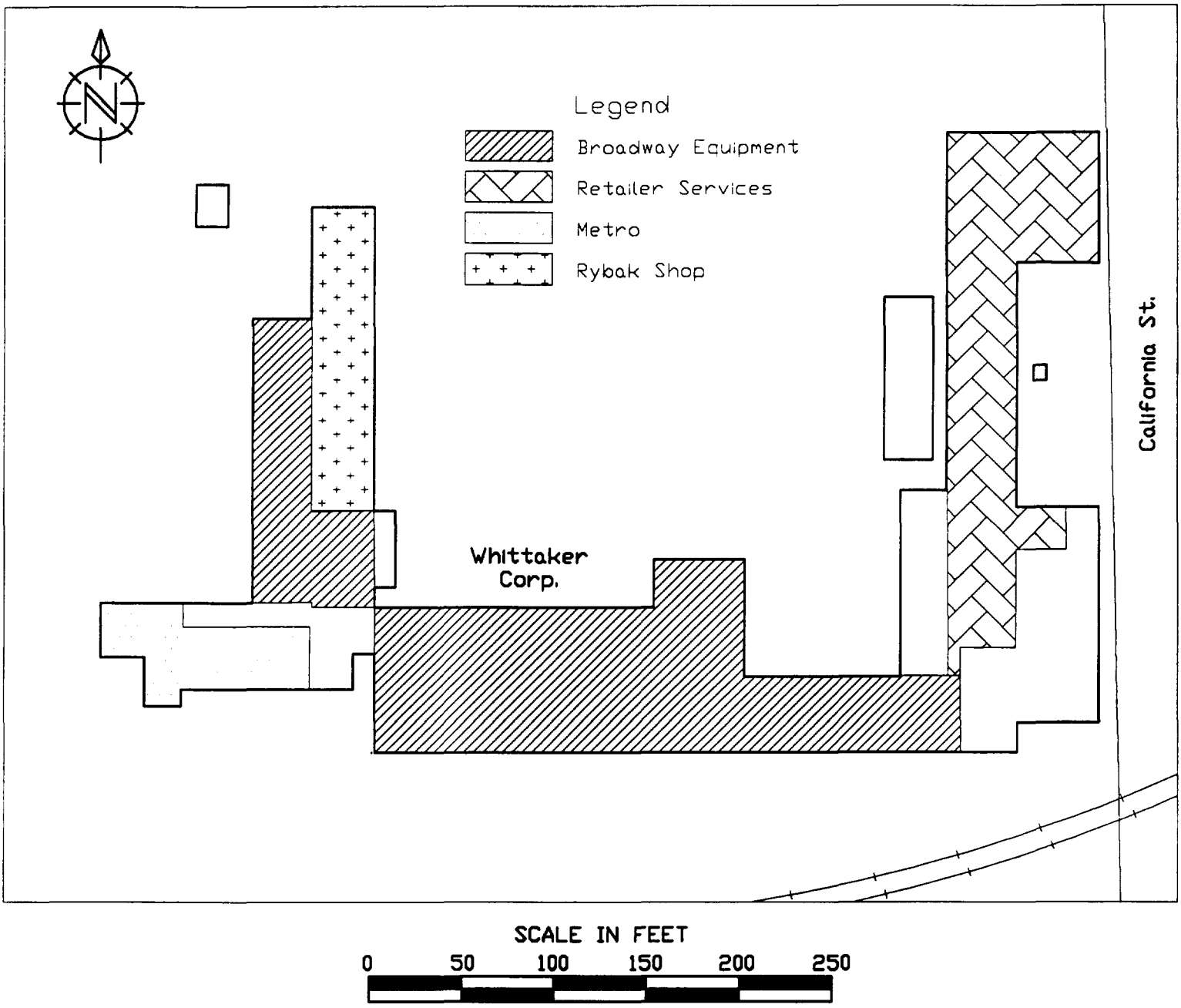


Figure 4 Areas Leased by Rybak

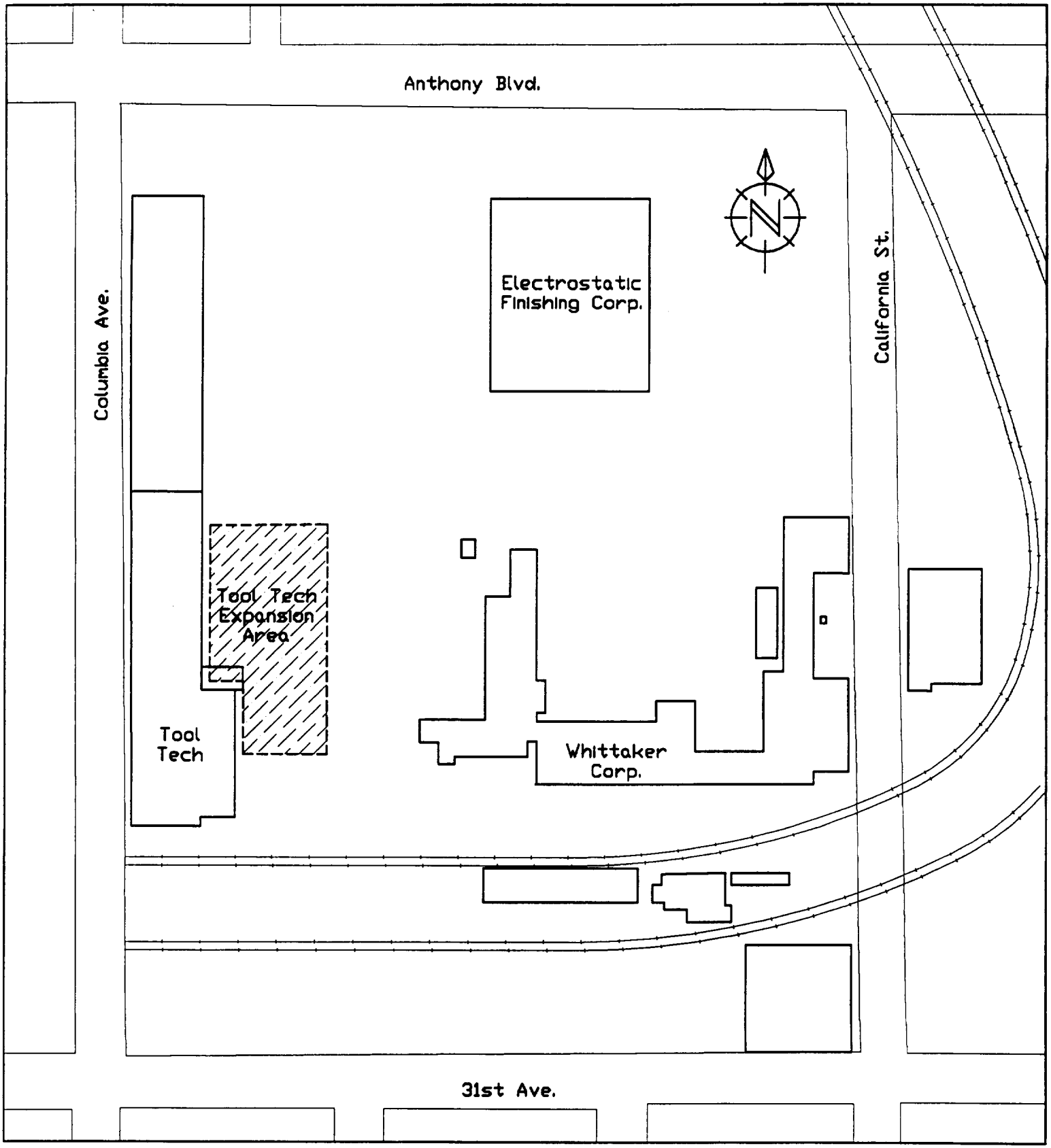


Figure 5 Tool Tech Expansion Area

TABLE 1
GROUNDWATER CLEAN UP STANDARDS

Chemical Parameter	1992 Annual Monitoring Results (Max. Conc.) ug/L	1991 RAL ug/L	1992 MCLs ug/l	1985 RFRA Cleanup Goals ug/L
Tolune	250	1000	1000	14,300
Ethylbenzene	4,500	700	700	1,400
Total Xylenes	15,000	10,000	10,000	500
Tri-chloroethylene	not analyzed	30	5	not listed in RFRA
1,2,-Dichloroethylene	not analyzed	cis- 70 trans-100	cis- 70 trans-100	not listed in RFRA

TABLE 2
ANALYTICAL PARAMETER LIST AND MONITORING SCHEDULE

Location ---	Frequency ---		---------- Analytical Parameters* ----------					
Well No.	Annual	Quarterly	Xylene	Ethyl Benzene	Toluene	1,1-dichloro-ethylene	Trichloro-ethylene	Benzene
1	X		X	X	X			
3		X	X	X	X			
4		X	X	X	X	X	X	
6	X		X	X	X			
7	X		X	X	X			
8		X	X	X	X			
10		X	X	X	X	X**	X**	
11	X		X	X	X			
12		X	X	X	X			X
13	X		X	X	X			
Pumpout System		X	X	X	X			

*Water levels to be taken on all wells quarterly.

**To be done annually.